DETAILED ACTION

Election/Restrictions

In view of the cancellation of claims directed to a non-elected invention, there are currently no claims withdrawn.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 10/9/07 was filed after the mailing date of the Non-Final rejection on 7/6/07 and re-mailed on 11/19/07 submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

The references cited in the Partial European Search Report submitted on 10/9/07 have been considered, but will not be listed on any patent resulting from this application because they were not provided on a separate list in compliance with 37 CFR 1.98(a)(1). In order to have the references printed on such resulting patent, a separate listing, preferably on a PTO/SB/08A and 08B form, must be filed within the set period for reply to this Office action.

A17 on the information disclosure statement filed 10/19/07 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because missing publication date. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement

or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

Claim Objections

Claims 1 and 17 are objected to because of the following informalities: the term 'E3L' in the claims does indicate whether it is an E3L gene or an E3L protein. Suggest clarifying the term by indicating whether the E3L is a protein or a gene. In addition, it is not apparent if the term 'from the amino terminus' in claims 1 and 17 and claims dependent therefrom is directed to the amino terminus of the virus or the E3L gene product. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The term 'truncation mutation in E3L of less than 83 amino acids from the amino terminus' in claim 1 and 'truncation mutation in E3L of about 54 amino acids' in claim 17 is broad and can read on an E3L gene product having 83 amino acids or less than 83 amino acids removed from the N-terminus.

Claims 1, 3, 9, 10, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al. (A2) taken with Jacobs et al. (A8). Roberts et al. teach a method of treating neoplasm in a mammal using a vaccinia virus having a mutation in the E3L gene (pages 10 and 26). Roberts et al. teach the neoplasm can be breast or prostate (page 11). The skilled artisan can administer the virus using intravenous administration (page 11). However, Roberts does not specifically teach which amino acids of the E3L gene product could be mutated.

However, at the time the invention was made, Jacobs et al. teach a vaccinia virus from which the region encoding the N-terminal 83 amino acids of the E3L gene product have been deleted (abstract). Jacobs et al. teach, "…that deletion of the DNA encoding a N-terminal portion of E3L gene product maintains viral replication, protein synthesis, interferon-resistant and cell tropism that is indistinguishable from wild type virus, but has remarkably reduced pathogenicity…(page 4)."

It would have been *prima facie* obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Roberts taken with Jacobs et al., namely to produce a vaccinia virus from which the region encoding the N-terminal 83 amino acids of the E3L gene has been deleted. One of ordinary skill in the art would have been motivated to combine the teaching to kill cancer cells with a vaccinia virus. "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." See ***KSR v. Teleflex***, 550 U.S. ___, 127 S. Ct. 1727 (2007).

Therefore the invention as a whole would have been *prima facie* obvious to one ordinary skill in the art at the time the invention was made.

Applicant's arguments, see pages 6-8, filed 2/8/08, with respect to the rejection(s) of claim(s) 1 and 3-10 under 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the amendment to claim 1 and addition of claim 17.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts taken with Jacobs as applied to claims 1, 3, 9, 10, and 17 above, and further in view of Coffey et al. (US 20020028195).

Roberts et al. taken with Jacobs et al. do not specifically teach administering the virus to cancer cells that are ras-transformed cells.

However, at the time the invention was made, Coffey teaches administering modified vaccinia virus to ras-transformed cells (page 2). "Mutation or deletion of the genes responsible for antagonizing PKR should prevent viral replication in cells in which the PKR activity is normal (i.e. normal cells) (page 2)." "However, if infected cells are unable to activate the antiviral response mediated through PKR (i.e., Ras-mediated tumor cells), then these mutant viruses should replicate unheeded and cause cell death (page 2)." "Therefore, these mutant viruses can replicate preferentially in Ras-transformed cells where it is determined that PKR is unable to function (page 2)."

It would have been *prima facie* obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Roberts et al. taken with Jacobs et al. in further view of Coffey, namely to administer modified vaccinia virus to ras-transformed cells. One of ordinary skill in the art would have been motivated to combine the teaching since viruses can replicate preferentially in ras-transformed cells where PKR is unable to function.

In view of Roberts and Coffey, one of ordinary skill in the art would have had a reasonable expectation of success for administering the virus to Ras transformed cells.

Therefore the invention as a whole would have been *prima facie* obvious to one ordinary skill in the art at the time the invention was made.

Applicant's arguments, see page 8, filed 2/8/08, with respect to the rejection(s) of claim(s) 1 and 2 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the amendment to claim 1.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Whiteman whose telephone number 571-272-

0764. The examiner can normally be reached on from 6:30 to 4:00 (Eastern Standard Time). The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor James Douglas Schultz can be reached on 571-272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Brian Whiteman/
Primary Examiner, Art Unit 1635